



Space Science & Astrobiology Division

Ames Center for Exoplanet Studies (ACES) Seminar

Re-inflated Warm Jupiters around Red Giants: A New Test for Models of Hot Jupiter Inflation

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Abstract: Ever since the discovery of the first transiting hot Jupiter, models have sought to explain the anomalously large radii of highly irradiated gas giants. We now know that the size of the hot Jupiter radius anomaly scales strongly with a planet's level of irradiation and numerous models have since been developed to help explain these inflated radii. In general however, these models can be grouped into two broad categories: 1) models that directly inflate planetary radii by depositing a fraction of the incident irradiation in the convective interior and 2) models that simply slow a planet's radiative cooling allowing it to retain more heat from formation and thereby delay contraction. Here we propose a new test to distinguish between these two classes of models, by examining the post-main sequence radius evolution of gas giants with moderate orbital periods of ~ 10 -30 days. If hot Jupiter inflation actively deposits heat in a planet's interior then current and upcoming transit surveys should uncover a new population of "re-inflated" gas giants around post main sequence stars.